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ABSTRACT

The purpose of this study was to construct-validate the REPI. The judgmental data of 25 content specialists were examined. The response data of 416 students were item analyzed and submitted to principal components analyses with orthogonal and oblique rotations. The items were generally representative of the content universe and 50 items optimally discriminated among the subjects. Both the REPI defined and factor derived scales were reliable. Uncorrelated factors identified the underlying philosophical dimensions, but could not be combined to fit the item grouping assumption of the REPI. A substantial amount of test variance was explained and factor invariance was demonstrated. Evidence pointed to the internal validity of the instrument. (Author)

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THE INTERNAL CONSTRUCT VALIDITY OF THE ROSS EDUCATIONAL PHILOSOPHICAL INVENTORY

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Background

Fundamental philosophical beliefs are reputed to have a strong bearing on the quality of education. Teachers often do not know what educational philosophy they hold, but the influence of such attitudes or beliefs are felt in the classroom (Neff, 1966). The relationship between educational philosophy and practices has been well-documented in the literature. If these belief patterns can be crystallized into known philosophical positions, the resultant information may aid teachers, education faculty, and school administrators in the career planning and placement of teachers, and in the designs and assessments of professional education curriculum and teacher training programs.

This investigator conducted a survey of educational attitudinal instruments, including those of Enlow (1939), Lodge (1947), Kerlinger and Kaya (1959), Biggs (1963), Kerlinger (1967), and Thomas (1968). These scales pointed to the need for more appropriate and adequate measuring devices to tap current educational philosophies in the context of today's school setting (Felker, 1966; Shaw & Wright, 1967).

The Ross Educational Philosophical Inventory (REPI) is an 80-item, five-step Likert-type, self-reporting instrument that purports to measure the degree to which teachers hold each of the four major educational philosophies--Idealism, Realism, Pragmatism, and Existentialism (Ross, 1970). The purpose of this study was to explore the reliability and validity of the REPI as an extension of research begun earlier by this investigator (Villano, 1971).

Procedures

Judgmental data used in this study were gathered from 22 members of the New England Philosophy of Education Society in 1971. The response data were collected on 416 subjects (Ss), graduate and undergraduate majors at one Mid-western and two Eastern colleges, from 1967 to 1971. Repeated measures (retest) were obtained on 119 Ss from this group.

The procedures discussed herein were designed to establish supportive evidence for the internal construct validity of the REPI (Cronbach & Meehl, 1955; Loevinger, 1967). Three methods used were: (1) substantive or content validity; (2) structural validity; and (3) factorial validity.

The REPI was qualitatively item-analyzed. This included: (1) an examination of the test "blueprint" for four content areas (Idealism, Realism, etc.) and three functional areas (epistemology, metaphysics, and axiology) of philosophy (Morris, 1966); (2) the stylistic editing of the item-statements (Edwards, 1957); and (3) the rating by judges on the assignment and relevancy of the items to the four REPI philosophical subscales.

The response data were statistically item-analyzed to determine the item distributions and discriminations (Veldman, 1967). Mean scores and variabilities for different subsets of the sample group were tabulated. Reliability coefficients for internal consistency (Coefficient ALPHA) and temporal stability (retest after 3 weeks) were calculated for the REPI-defined subscales (Nunnally, 1967).

Factor analysis of the response data was used to ascertain the basic dimensions or constructs underlying the REPI and the total amount of test variance explained. A principal-components analysis with an orthogonal (Varimax) rotation was conducted on the original set of 80 items (Kaiser, 1958). A second components analysis with an oblique (Obliquimax) rotation (Hofmann, 1970) was conducted on the 50 psychometrically-"strongest" items as determined by the judges' ratings, statistical item analysis, and the first components analysis (Guertin & Bailey, 1970). Estimated alpha internal consistency reliabilities were calculated for the dimensions or scales derived from the oblique factor solution. Coefficients of congruence for factor invariance (Harman, 1967) were computed between different subsets of the sample group, two methods of factor rotation, and occasions of testing.

Findings

The REPI items were well-distributed among the content and functional areas of educational philosophy. Most of the items met the editing requirements for attitudinal statements. The judges agreed 80-percent with Ross' item-placement of the subscales and assigned a mean item rating of "very relevant." The inter-judge agreement was substantial. The instrument appeared representative of its specified content universe.

The mean scores and standard deviations of the total and selected and random subsets of the sample group exhibited close correspondence and by inspection there seemed to be little tendency to agree or disagree indiscriminately (see Table 1). Fifty items were identified that best discriminated among the subjects. The mean of the REPI subscale reliability coefficients was in the .70's which was considered satisfactory when compared to other studies (see Table 2).

The factor analyses indicated that the REPI could be parsimoniously described. For example, in the oblique solution less than one-third as many factors (15) as item-variables (50), accounted for well over one-half of the total test variance (56%) (see Table 13). The derived dimensions or scales from both factor solutions were generally descriptive of educational philosophy; however, they were uncorrelated and therefore could not be combined on an empirical basis to "fit" the item-grouping assumption of the four subscales defined by the REPI scoring key. The oblique components analysis produced a "cleaner" solution than its 80-item (26 factor) counterpart, with a higher proportion of interpretable factors and fewer doublet and specific factors, that facilitated the naming of the dimensions (see Tables 3 to 10). Many of the factor-scale alpha reliabilities reached minimum useable levels for dimension-scoring (see Table 11). Coefficients of congruence demonstrated good to excellent factor stability between the sample groups, factor rotations, and the pre- and posttest administrations of the REPI (see Table 12).

The coalescence of judgmental and empirical evidence pointed to a "convergence of indicators," a necessary first step in establishing the internal construct validity of the REPI. Recommendations were made for: (1) dimension-derived scoring; (2) reversal in the direction of scoring of certain items; (3) new or revised items to increase the dimension reliabilities; and (4) administration of a revised form of the REPI to a new, more heterogeneous sample.

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TABLE 1

A COMPARISON OF THE REPI MEAN SCORES AND STANDARD DEVIATIONS FOR DIFFERENT SAMPLE GROUPS (80 ITEMS)

GROUP (N)	I $\bar{X}$ (SD)	R $\bar{X}$ (SD)	P $\bar{X}$ (SD)	E $\bar{X}$ (SD)	Total Scale $\bar{X}$ (SD)
Normative (652)	56.9 (9.4)	56.6 (9.2)	71.4 (7.0)	69.9 (8.0)	254.8 (*)
Study (416)	56.5 (8.3)	55.4 (8.5)	70.1 (7.1)	70.4 (7.5)	252.9 (19.4)
Random(I) (208)	56.4 (7.9)	55.5 (8.8)	70.5 (7.0)	70.5 (7.6)	252.9 (19.7)
Random(II) (208)	56.7 (8.7)	55.3 (8.1)	70.6 (7.2)	70.4 (7.4)	253.0 (19.1)
Pre-test (119)	55.9 (7.6)	55.0 (8.5)	69.2 (6.6)	68.6 (7.5)	248.6 (19.8)
Post-test (119)	54.1 (9.5)	55.7 (8.6)	73.8 (7.8)	72.4 (8.7)	256.0 (18.)

*This figure was not reported.

TABLE 2

RELIABILITY COEFFICIENTS

FOR FOUR REPI SUBSCALES (80 ITEMS)

Sub-Scale	ALPHA Coefficient Internal Consistency (N = 416)	Test-Retest (N =62)[a]
Idealism	.72	.73
Realism	.75	.84
Pragmatism	.66	.65
Existentialism	.69	.76

[a] Three-week interval.

TABLE 3

FACTOR I: REALISM GROUP FACTOR

Item No.	Factor Loading	REPI Statement
26	,66	Mind in every detail of its behavior is purely physical and can be explained completely by analyzing it into organic (cerebral) and inorganic (environmental) factors in a state of interaction.
76	.56	The mind is biological in origin.
46	.52	Knowledge is systematized--it is all certain, all objective, and all in accord with the teachings of physical science as to the nature of physical reality.
68	.46	Obtaining knowledge is essentially a process of searching the universe for facts.
53	.46	True ideas are those we can assimilate, validate, corroborate and verify.
66	.46	Reality originates in the material and physical world.
14	.43	Man discovers knowledge from the physical and material world.
10	.39	Knowledge is true if it corresponds to physical reality.
20	.39	Learning is a matter of conditioning.

TABLE 4

FACTOR II: GOD AS SOURCE OF KNOWLEDGE

Item No.	Factor Loading	REPI Statement
79	.71	The aims and laws which regulate human conduct are determined by superior intelligence of an ultimate being.
49	.70	God is real.
55	.69	The origin of knowledge is in a supernatural source.
62	.67	Man has a spiritual destiny to fulfill.
23	.35	There is a universal moral law.

TABLE 5

FACTOR III: EXISTENTIALISM GROUP FACTOR

Item No.	Factor Loading	REPI Statement
2	.61	The basis of morality is freedom.
50	.60	Reality exists in confronting problems consisting of love, choice, freedom, personal relationships and death.
75	.53	Reality occurs when man chooses to confront a situation, make a commitment.
13	.41	The only values acceptable to the individual are those he has freely chosen.

TABLE 6

FACTOR IV: REALITY AS MENTAL, SPIRITUAL

Item No.	Factor Loading	REPI Statement
4	.68	Reality is spiritual or mental in nature.
18	.67	Physical objects are ideas in the mind of the perceivers; matter is not real.
43	.64	Reality is a projection of the supernatural mind.
30	.50	The mind is a spiritual entity and dictates or determines what is reality.
57	.43	Matter is real and concretely exists in its own right independently of the mind.
80	.40	The existence of reality lies in man himself.
12	.37	Man is essentially a spiritual being, needing assistance in setting himself free from the confines imposed by acceptance of the physical and social world.

TABLE 7

FACTOR IX: DETERMINISM

Item No.	Factor Loading	REPI Statement
44	.64	All present events have been caused by preceding events and will in turn bring about subsequent events, in a precise pattern of succession.
24	.64	Man is a small part of a large universal idea.
23	.43	There is a universal moral law.

TABLE 8

FACTOR XI: PRAGMATISM GROUP FACTOR

Item No.	Factor Loading	REPI Statement
41	.75	Intelligence is the ability to formulate and project new solutions to problems.
25	.62	Knowledge is found by considering the practical consequences of ideas.
15	.50	Knowledge is an instrument for the sake of survival, existing as practical utility.
3	.45	Learning is a process of social interaction resulting in the creation of new relationships which can be applied to bio-social problems.
8	.37	Knowledge is successful adaptation to, and modification of, the environment.

TABLE 9

FACTOR XII: TRUTH AS PRAGMATIC, EXPERIENTIAL

Item No.	Factor Loading	REPI Statement
47	.68	An idea is true because it is useful.
32	.53	Knowledge does not exist that does not engage the feeling of the knower.
39	.43	Man is nothing until he acts.
59	.42	What man cannot experience cannot be real for him.

TABLE 10

FACTOR XV: PASSIVITY

Item No.	Factor Loading	REPI Statement
5	.69	Man is primarily a plastic nervous system to be molded, in interactivity with the physical environment along lines set by the scientifically ascertained nature of physical reality.
72	.40	Man receives knowledge by revelation.
20	.34	Learning is a matter of conditioning.

TABLE 11

ESTIMATED ALPHA INTERNAL CONSISTENCY RELIABILITY FOR

THE 50-ITEM OBLIQUE FACTOR-DEFINED REPI SCALES[a]

Factor Scale	Dimension	Number of Items	Estimated Alpha Reliability
I	Realism Group Factor	9	.73
II	God as Source of Knowledge	5	.72
III	Existentialist Group Factor	4	.47
IV	Reality as Mental, Spiritual	7	.68
IX	Determinism	3	.41
XI	Pragmatism Group Factor	5	.63
XII	Truth as Pragmatic, Experiential	5	.51
XV	Passivity	3	.38

[a]Only the interpretable non-doublet factor scales have been displayed.

TABLE 12

COEFFICIENTS OF CONGRUENCE FOR PAIRS OF COMPARABLE DIMENSIONS DERIVED FROM FACTOR ANALYSES OF THE REPI BETWEEN TWO RANDOM GROUPS[1], TWO FACTOR ROTATIONS[2], AND TWO OCCASIONS OF TESTING[3].

Factor Number	Name of Factor or Dimension	Coefficients of Congruence: Random Groups	Factor Rotations	Testing Occasions
I	Realism Group Factor	.81	.92	.76
II	God as Source of Knowledge	.96	.96	.88
III	Existentialism Group Factor	.76	.98	.93
IV	Reality as Mental, Spiritual	.82	.99	.76
IX	Determinism	.92	a	.89
XI	Pragmatism Group Factor	.81	.99	.87
XII	Truth as Pragmatic, Experiential	.73	.97	.60
XV	Passivity	a	.87	.70

[1] N = 208 Ss for each group.

[2] Orthogonal (80 Item) vs Oblique (50 Item), N = 416 Ss.

[3] Pre-test vs Posttest administration, 3-week interval, N = 119 Ss.

[a] Comparable dimension did not emerge for one of the pair.

TABLE 13

PRIMARY PATTERN MATRIX FOR DERIVED COMPONENTS SOLUTION USING OBLIQUIMAX TRANSFORMATION[a]

Item[b] No.	Factor														
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XiV	XV
1														72	
2			61												
3											45				
4				68											
5															69
8						51					37				
10	39						34								
12				37											
13			41									35			
14	43									-35					
15											50				
16							62								
17									65						
18				67											
19						72									
20	39														34
23		35													
24									64						
25											62				
26	61														
27							56								
30				50											
32												53			
33													-56		
39												43			
40															
41											75				
43				63											
44									64						
46	52														
47												68			
49		70													

TABLE 13 (Continued)

Item[b] No.	Factor I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
50			60												
51													63		
53	46														
55		69													
57			43												
59												42			
61								78							
62		67													
66	46														
68	46														
71								62							
72															40
74				72											
75			53												
76	56														
78										66					
79		71													
80		35		40											
Eigenvalues:	4.44	3.88	3.20	2.13	1.65	1.52	1.49	1.39	1.29	1.24	1.19	1.17	1.12	1.04	1.01
Cum. % Variance:	8.9	16.6	23.0	27.3	30.6	33.6	36.6	39.4	42.0	44.4	46.8	49.1	51.4	53.5	55.5

[a]Loadings have been multiplied by 100, and loadings less than .34 have been deleted. Loadings have the same sign due to rescaling of items written negatively.

[b]Item numbers correspond to the original 80-item REPI instrument.